



# F2F monitoring framework

Presentation to the *Advisory Group on Sustainability of Food Systems*

*19 September 2023*

# Introduction

# Outline

- Introduction (why, what and how to monitor)
- Architecture
- Food system sustainability model (overview and core elements)
- Challenges
- Indicators proposed for the dashboard
- Concept of the F2F dashboard
- Closing remarks

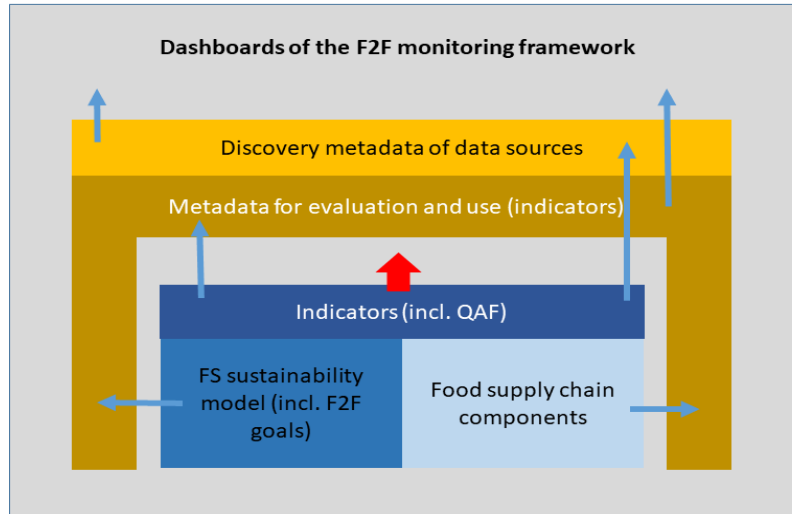
# Why and what to monitor?

- Communication COM/2020/381: A Farm to Fork Strategy (F2F) for a fair, healthy and environmentally-friendly food system
- [The Commission] “will **monitor the transition to a sustainable food system** so that it operates within planetary boundaries , including progress on the targets and overall reduction of the environmental and **climate** footprint of the EU food system. It will collect data regularly, [...] for a comprehensive **assessment** [...] on **competitiveness**, the **environment** and **health**.”

# How to monitor?

- Develop an integrated food system sustainability model to link the targets and objectives of the F2F Strategy to the Food System (FS) model, across the three sustainability dimensions
- Select indicators covering the
  - The elements of the FS sustainability model
  - Components of the food supply chain
- Publish indicators in a dashboard including related metadata

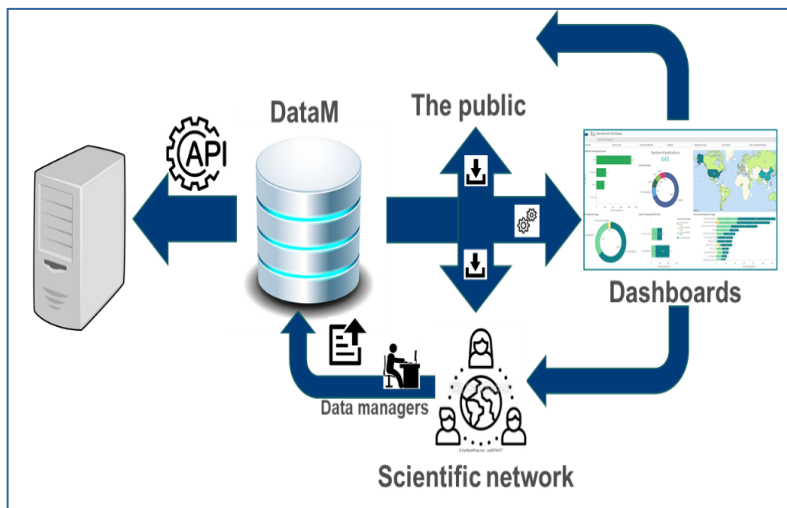
# Architecture of the monitoring framework



Legend: Metadata flow Data flow QAF: Quality assessment framework

## Indicators for monitoring are

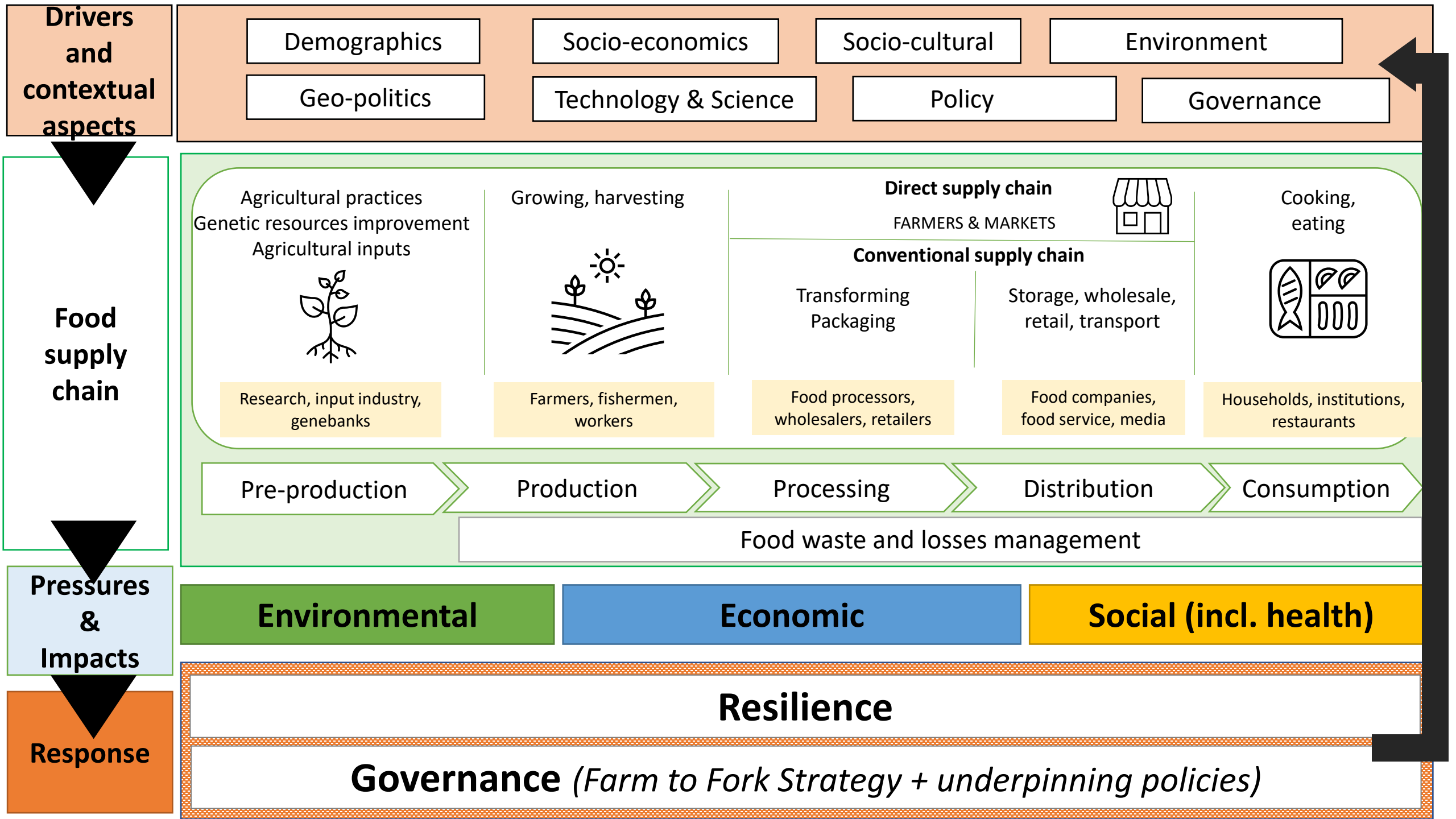
- Harvested from the original sources (with APIs\*), or calculated from original data (“reuse existing” principle)
- Linked to the elements of the FS sustainability model
- Linked to the Food supply chain components
- Documented according to the agreed metadata schema
- Evaluated according to the agreed Quality assessment framework (QAF) - min. quality for publishing is required
- Maintained in a database and published in a dashboard on the DataM platform



\* API – Application Programming Interface

# Food System Sustainability Model

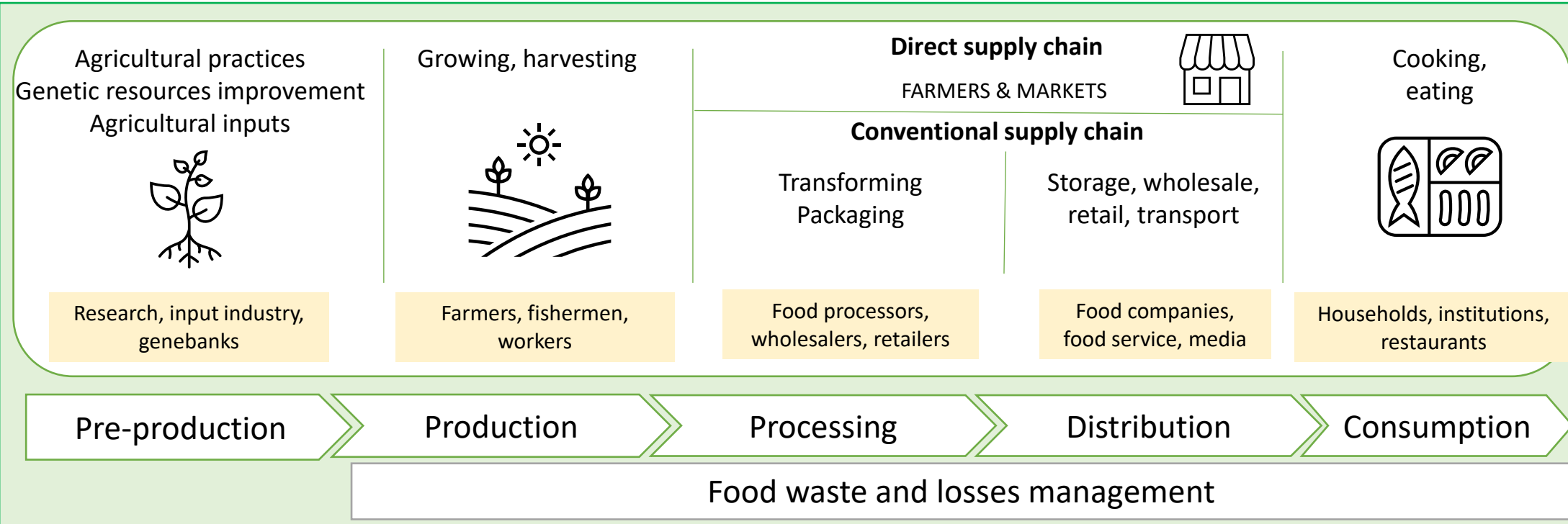
Overview and core elements



**Drivers and contextual aspects**

- Demographics
- Socio-economics
- Socio-cultural
- Environment
- Geo-politics
- Technology & Science
- Policy
- Governance

**Food supply chain**



**Pressures & Impacts**

- Environmental
- Economic
- Social (incl. health)

**Response**

**Resilience**

**Governance (Farm to Fork Strategy + underpinning policies)**



# Core elements of the FS model

## Indicators

- Attributes (Name, Definition, Description, Policies, Geographic coverage, Temporal properties, Unit of measure, DPSIR\* value, Direction, Indicator value, Uncertainty, Role in the dashboard)
- Metadata elements (Data provider and link, Methodology, Publications and legal references, Condition of use, Data quality score)

## Sustainability model

- 3 dimensions (environmental, economic, social)
- 13 thematic areas
- 40 domains (sustainability sub-dimensions)

All the domains are linked to one or more objectives of the F2F Strategy (if applicable – some domains are not covered by the Strategy)

## Components of the food supply chain

- Primary production (agriculture, aquaculture and fisheries)
- Food processing
- Food distribution
- Food consumption

\*DPSIR – value according to the Drivers, Pressure, State, Impact, Response framework

# FS sustainability model – dimensions and thematic areas



## Environmental

- Climate change adaptation and mitigation
- Reduction of other emissions, pollution and sales of antimicrobials for food-producing animals
- Sustainable use and management of resources
- Biodiversity
- Food loss and waste reduction
- Cross-cutting



## Economic

- Economic viability of business
- Logistics and development



## Social (incl. health)

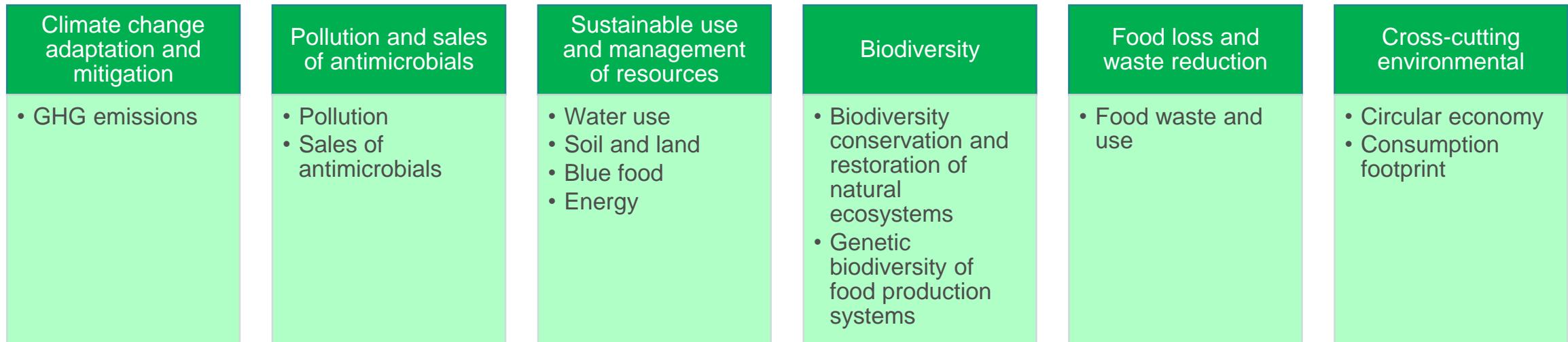
- Fair, inclusive and ethical value chain
- Food environment
- Nutrition and health

Resilience

Governance

Food heritage

# FS sustainability model – domains in the environmental dimension



# FS sustainability model – domains in the economic dimension

## Economic viability of businesses

- Income distribution
- Sectorial growth
- Market power and business structure
- Price
- Trade

## Logistics and development

- Technology and digitalization
- Transport, accessibility and infrastructure



# FS sustainability model – domains in the social dimension

## Fair, Inclusive and Ethical value chain

- Inclusion and gender equity
- Employment
- Poverty
- Social protection
- Equitable access to capital, technology, land vessels, and markets
- Animal welfare

## Food environment

- Consumer food education and literacy
- Food marketing and information to consumers
- (Sustainable) food availability
- (Sustainable) food affordability
- Properties of food
- Food access

## Nutrition and health

- Nutrition and healthy, sustainable diets
- Health impact from diets



# Indicators

- Over 350 indicators collected and documented with metadata in a database (indicator pool);
- Mapped to the FS model (links to one or more supply chain component and sustainability domain);
- Evaluated according to their fitness for the purpose and sustainability of production (geographic and time coverage);
- Categorised according to their designation to the dashboard (headline, secondary, placeholder, pool, duplicate, unfit).

# Criteria for the selection of indicators

- Fitness for the purpose
  - Policy relevance (link to F2F objectives and or the FS in general, support of other EU policies)
  - Sound methodology (data sources, workflow, formula, quality control, maintenance, legal or peer reviewed references)
- Sustainability of indicator production
  - Geographical coverage
  - Temporal coverage (timeliness, update frequency, time series duration)
- Selection done out of 263 existing indicators + 44 placeholders proposed to fill the gaps

# Classification of indicators

- **Headline** measure the most prominent goals of the F2F and the most important sustainability criteria of the food system. They are visible in the dashboard.
- **Secondary** further detail a headline indicator or provide information on other domains without a headline indicator. They are visible in the dashboard.
- **Placeholder** conceptually important indicators that should become part of the dashboards in the future. They also mark the gaps, where data collection, and/or conceptualisation of the indicator is needed.
- **Pool** indicators of insufficient quality or acceptable quality and lesser importance. They can be activated when there is a new policy priority, or to replace similar indicators in case of quality improvement.
- **Duplicate** (indicators with different name, but with the same data content).
- **Unfit** (not specific for assessing the sustainability of the Food System)



# Challenges

- Indicator gaps along the food chain
  - Current selection of indicators does not yet evenly cover the components of the food supply chain in a balanced way. Food processing and food distribution are still insufficiently covered.
- Thematic gaps: Food environment, Aquaculture, Animal welfare, Inclusion and Social protection
- The Commission is aware of the need to address all relevant sectors.
  - Placeholder indicators currently are non-exhaustive. They only indicate next steps in the development, but further work is needed.
- No exact definition of overall FS sustainability and resilience
  - Difficult to define a general headline indicator (overall index?)

# Indicators proposed for the dashboard

# Environmental dimension

# Climate change adaptation and mitigation

| Domain        | Indicator  | PP | FP | FD | FC |
|---------------|--|----|----|----|----|
| GHG emissions | GHG food system emissions  |    |    |    |    |
|               | Greenhouse gas emissions from agriculture                            |    |    |    |    |
|               | Net GHGs Emissions from LULUCF sector                                |    |    |    |    |
|               | Fishing-related CO2 emissions per kg of human consumption catch (EU) |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

Note. These are territorial indicators. To include the effect of food/feed import, these indicators can be presented together with Consumption footprint – GHG emission.

# Climate change adaptation and mitigation

- GHG food system emissions. This (EDGAR-FOOD) indicator has been developed by the JRC to aid the understanding of the activities underlying the energy demand and use, agriculture and land use change emissions associated with the production, distribution, consumption and disposal of food through the various stages and sectors of the composite global food system.
- Greenhouse gas emission from agriculture includes the following sources of greenhouse gases from agriculture: i. enteric fermentation (CH<sub>4</sub>); ii. manure management (CH<sub>4</sub>, N<sub>2</sub>O); iii. rice cultivation (CH<sub>4</sub>); iv. agricultural soil management (CH<sub>4</sub>, N<sub>2</sub>O, CO<sub>2</sub>), including burning of field residues, liming and application of C-containing fertilisers.
- Net GHGs Emissions from LULUCF sector measures net carbon removals from the land use, land use change and forestry (LULUCF) sector, considering both emissions and removals from the sector.
- Fishing-related CO<sub>2</sub> emissions per kg of human consumption catch (EU) tracks the efficiency of fuel use expressed in terms of CO<sub>2</sub>-eq emissions by marine capture fisheries =  $(\text{Fuel consumption} \times 2.64) / (\text{Total weight of landings})$ .

# Pollution and sales of antimicrobials for food producing animals

| Domain                  | Indicator  | PP        | FP | FD | FC |
|-------------------------|--|-----------|----|----|----|
| Pollution               | Use and risk of chemical pesticides (F2F pesticide reduction target 1) | PP        |    |    |    |
|                         | Use of more hazardous pesticides (F2F pesticide reduction target 2)    | PP        |    |    |    |
|                         | Water quality - Nitrates in groundwater                                | PP        | FP |    | FC |
|                         | Ammonia emissions from agriculture                                     | Secondary |    |    |    |
| Sales of antimicrobials | Sales of antimicrobials for food producing animals                     | PP        |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Pollution and sales of antimicrobials for food producing animals

- Use and risk of chemical pesticides is based on the quantities of active substances contained in the pesticides which are placed on the market and the hazard properties of these active substances (considering 4 hazard categories)
- Use of more hazardous pesticides is calculated by adding together the quantities of active substances (categorised into Group 3 of Directive 2009/128/EC). These substances are approved as candidates for substitution
- Nitrates in groundwater: percentage of ground water stations with nitrates concentration over 50 mg/l as per the Directive 91/676/EEC
- Ammonia emissions from agriculture: The indicator measures the total amount of ammonia (NH<sub>3</sub>) emissions as a result of the agricultural production.
- Sales of antimicrobials for food producing animals: This indicator refers to action to improve the response of EU agriculture to societal demands on food and public health such as fighting antimicrobial resistance (AMR), promoting production of safe, nutritious and sustainable food, as well as animal welfare

# Sustainable use and management of resources (1)

| Domain    | Indicator   | PP          | FP       | FD | FC |
|-----------|---|-------------|----------|----|----|
| Blue food | Fishing pressure relative to maximum sustainable yield (trends in $F/F_{MSY}$ ) | Headline    |          |    |    |
|           | Fish stock biomass relative to biomass in 2003 (trends in $SSB/SSB_{2003}$ )    | Secondary   |          |    |    |
|           | Number of fish stocks for which fishing mortality (F) was above/below $F_{MSY}$ | Placeholder |          |    |    |
|           | Proportion of organic aquaculture production                                    | Placeholder |          |    |    |
| Energy    | Final energy consumption in agriculture, forestry and food industry             | Headline    | Headline |    |    |
|           | Production of renewable energy from agriculture and forestry                    | Secondary   |          |    |    |
|           | Biogas production in agriculture  | Secondary   |          |    |    |
|           | Fuel use of fisheries per Kg of fish landed in ports                            | Placeholder |          |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



# Sustainable use and management of resources (1a)

- Fishing pressure relative to maximum sustainable yield (trends in  $F/FMSY$ ) tracks the median values for  $F/FMSY$  over time for the NE Atlantic (52 stocks), Mediterranean and Black Seas (34 stocks) since 2003 to pursue the following CFP goal: restoring and maintaining populations of fish stocks above biomass levels capable of producing MSY.
- Fish stock biomass relative to biomass in 2003 (trends in  $SSB/SSB_{2003}$ ) tracks the trends in the biomass of assessed fish stocks (reference is 2003,  $B/B_{2003}$ ) in the NE Atlantic and the Mediterranean & Black Seas to pursue the following CFP goal: stop overfishing.
- The number of fish stocks for which fishing mortality ( $F$ ) was above/below  $FMSY$  fully fulfills the objective of the CFP so as to sustainably fish all fish stocks, while the Fishing pressure relative to maximum sustainable yield (trends in  $F/FMSY$ ) #0008 only provides the median of  $F/FMSY$  for the considered stocks. Once the number of fish stocks for which fishing mortality ( $F$ ) was above/below  $FMSY$  will also cover the Mediterranean Sea (2024?), it will be more relevant than #0008 and be proposed as a headline indicator, together with the CFP (also for policy consistency).
- Proportion of organic aquaculture production is the ratio of two existing and consistent Eurostat indicators: - Organic production of aquaculture products in Tonnes live weights (by country and year) & Aquaculture production in tonnes and value (Tonnes live weights by country and year) Eurostat(FISH\_AQ2A)

# Sustainable use and management of resources (1b)

- Final energy consumption in agriculture, forestry and food industry. This indicator measures the direct use of energy in agriculture and forestry and in food processing.
- Production of renewable energy from agriculture and forestry. Installed capacity (thermal and electrical) of a specific renewable energy technology (hydropower, solid, liquid and gases biomass, biogas, wind, solar PV, solar thermal, geothermal, and heat pumps), developed with CAP support.
- Biogas production in agriculture. The indicator captures the production of biogases from anaerobic digestion.
- Fuel use of fisheries per Kg of fish landed in ports ports indicates the intensity of fuel use by marine capture fisheries ( $= \text{Fuel consumption} / (\text{Total weight of landings})$ )

# Sustainable use and management of resources (2)

| Domain        | Indicator                                | PP | FP | FD | FC |
|---------------|--|----|----|----|----|
| Soil and land | Soil erosion by water                    |    |    |    |    |
|               | Gross nutrient balance – nitrogen        |    |    |    |    |
|               | Gross nutrient balance – phosphorus      |    |    |    |    |
|               | Soil organic carbon in agricultural land |    |    |    |    |
|               | Soil sealing in agricultural area        |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Sustainable use and management of resources (2)

- Soil erosion by water: this specific indicator assess potential soil loss by water erosion processes (rain splash, sheetwash and rills).
- Gross nutrient balance – nitrogen: presents a link between the agricultural activities responsible for high nitrogen loads and the environmental impact.
- Gross nutrient balance – phosphorus: provides an insight into the links between the use of agricultural nutrients, their losses to the environment, and the sustainable use of soil nutrients resources.
- Soil organic carbon in agricultural land: estimates the total organic matter content in soils on agricultural land.
- Soil sealing in agricultural area: change of agricultural land use in urban, transport and industrial categories.

# Sustainable use and management of resources (3)

| Domain        | Indicator   | PP          | FP          | FD          | FC          |
|---------------|---|-------------|-------------|-------------|-------------|
| Soil and land | Share of agricultural area under organic farming                    | Headline    |             |             |             |
|               | Agricultural land covered with landscape features                   | Headline    |             |             |             |
|               | Land cover - Agricultural areas                                     | Secondary   |             |             |             |
|               | Land cover - Fishing and Aquaculture areas                          | Secondary   |             |             |             |
|               | Utilised agricultural area  | Secondary   |             |             |             |
|               | Consumption of inorganic fertilizers - Nitrogen                     | Secondary   |             |             |             |
|               | Consumption of inorganic fertilizers - Phosphorous                  | Secondary   |             |             |             |
|               | Crop diversity  | Placeholder |             |             |             |
|               | Land use for food, feed and biofuels                                | Placeholder |             |             |             |
|               | Global deforestation index due to EU food consumption (net imports) | Placeholder | Placeholder | Placeholder | Placeholder |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Sustainable use and management of resources (3a)

- Share of agricultural area under organic farming: Existing organically-farmed areas and areas in process of conversion in the total utilised agricultural area UAA)
- Agricultural land covered with landscape features: Landscape features may include linear elements (e.g. hedgerows) and patches (e.g. trees, woodland, etc.), water & wet spots (ponds, water bodies, streams, etc.); moderately managed areas (e.g. field margins)
- Land cover - Agricultural areas: This indicator measures the amount of land used for agricultural purposes ((including natural grassland) ) relative to the total land area of a region
- Land cover - Fishing and Aquaculture areas - This indicator measures the Fishing and Aquaculture areas

# Sustainable use and management of resources (3b)

- Utilised agricultural area (UAA): This indicator is expressed as the total UAA in absolute terms (ha) and as the share of UAA in different categories of land use.
- Consumption of inorganic fertilizers – Nitrogen and phosphorous: total amount (in mass - tonnes of N and tonnes of P) of inorganic fertilisers consumed at MS
- Crop diversity: Agro-biodiversity in farming system via Crop diversity on farm and in a region
- Land use for food, feed and biofuels - Agricultural land use devoted to food, feed and biofuel production.
- Global deforestation index due to EU food consumption (net imports): Amount of deforestation area due to the import of food products in EU

# Sustainable use and management of resources (4)

| Domain    | Indicator   | PP | FP | FD | FC |
|-----------|---|----|----|----|----|
| Water use | Water use in agriculture                              |    |    |    |    |
|           | Irrigable area  |    |    |    |    |
|           | Reclaimed water for irrigation - quality and quantity |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



Water use for food processing



# Sustainable use and management of resources (4)

- Water use in agriculture. Water Exploitation Index Plus (WEI+), which provides an estimated measure of the total water use as a percentage of the renewable freshwater resources (groundwater and surface water) for a given territory and time period.
- Irrigable area. Irrigable area is defined as the maximum area which could be irrigated in the reference year using the equipment and the quantity of water normally available
- Reclaimed water for irrigation - quality and quantity. Reuse of treated/purified wastewater for irrigation.

# Biodiversity (1)

| Domain   | Indicator  | PP | FP | FD | FC |
|--|--|----|----|----|----|
| Biodiversity conservation and restoration of natural resources | Common Farmland Birds Indicator  |    |    |    |    |
|  | Consumption Footprint - Food (biodiversity loss)   |    |    |    |    |
|  | Grassland Butterfly Index  |    |    |    |    |
|  | Marine protected area coverage   |    |    |    |    |
|  | Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends |    |    |    |    |
|  | General trend of pollinators   |    |    |    |    |
|  | Impact of fisheries on marine biodiversity   |    |    |    |    |
|  | Pressure by invasive alien species on ecosystems   |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Biodiversity (1a)

- Common Farmland Birds Indicator. Proxy to assess the biodiversity status of agricultural landscapes in Europe.
- Consumption Footprint - Food (biodiversity loss). Quantification of the impacts of food consumption on biodiversity at EU and Member State level.
- Grassland Butterfly Index. Population trends of 17 butterfly species at EU-level.
- Marine protected area coverage. Percentage of marine waters, covered by protected areas
- Percentage of species and habitats of Community interest related to agriculture with stable or increasing trends. Species and habitats of Community interest related to agriculture with stable or increasing trends.

# Biodiversity (1b)

- General trend of pollinators. Percentage of species and habitats of Community interest for wild pollinators species.
- Impact of fisheries on marine biodiversity. Placeholder for a new indicator indicator for fisheries and a marine biodiversity
- Pressure by invasive alien species on ecosystems. Trend in the cumulative pressure exerted by invasive alien species (IAS) measured as the sum of their occurrence in an area (EEA 10 km<sup>2</sup> grid), weighted by the extent of the ecosystem potentially affected.

# Biodiversity (2)

| Domain                                  | Indicator  | PP | FP | FD | FC |
|---|--|----|----|----|----|
| Biodiversity of food production systems | Number of animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities |    |    |    |    |
|   | Number of plant genetic resources for food and agriculture secured in either medium- or long-term conservation facilities  |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



In-situ biodiversity conservation

# Biodiversity (2)

- Number of animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities. (Definition: as in the title of the indicator.)
- Number of plant genetic resources for food and agriculture secured in either medium- or long-term conservation facilities. (Definition: as in the title of the indicator.)

# Food loss and waste reduction

| Domain             | Indicator           | PP | FP | FD | FC |
|--------------------|---------------------|----|----|----|----|
| Food waste and use | Food loss and waste |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Food loss and waste reduction

- Amount of food waste for all stages of the supply chain reported by EU Member States, according to the methodology set out in Annex III of Commission delegated decision (EU) 2019/1597.



# Cross-cutting (1)

| Domain                | Indicator  | PP | FP | FD | FC |
|-----------------------|--|----|----|----|----|
| Circular economy      | Manure and soil biodiversity                       |    |    |    |    |
| Consumption footprint | Consumption footprint – general index              |    |    |    |    |
|                       | Consumption Footprint: Acidification               |    |    |    |    |
|                       | Consumption Footprint: Climate change              |    |    |    |    |
|                       | Consumption Footprint: Eutrophication, freshwater  |    |    |    |    |
|                       | Consumption Footprint: Eutrophication, marine      |    |    |    |    |
|                       | Consumption Footprint: Eutrophication, terrestrial |    |    |    |    |
|                       | Consumption Footprint: Freshwater ecotoxicity      |    |    |    |    |
|                       | Consumption Footprint: Ionising radiation          |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Cross-cutting (2)

| Domain                | Indicator  | PP | FP | FD | FC |
|-----------------------|--|----|----|----|----|
| Consumption footprint | Consumption Footprint: Human toxicity, cancer            |    |    |    |    |
|                       | Consumption Footprint: Human toxicity, non-cancer        |    |    |    |    |
|                       | Consumption Footprint: Land use                          |    |    |    |    |
|                       | Consumption Footprint: Ozone depletion                   |    |    |    |    |
|                       | Consumption Footprint: Particulate matter                |    |    |    |    |
|                       | Consumption Footprint: Photochemical ozone formation     |    |    |    |    |
|                       | Consumption Footprint: Resource use, fossil              |    |    |    |    |
|                       | Consumption Footprint: Resource use, minerals and metals |    |    |    |    |
|                       | Consumption Footprint: Water use                         |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Cross-cutting

- Manure and soil biodiversity: Manure used in a hectare of agricultural land
- Consumption Footprint: The Consumption Footprint - Food is a set of 16 Life Cycle Assessment (LCA)-based indicators (here reported as single score) whose purpose is to quantify the environmental impacts of food consumption at EU and Member State level. The environmental impacts can be assessed against the Planetary Boundaries.

# Economic dimension

# Economic viability (1)

| Domain                              | Indicator   | PP          | FP          | FD          | FC |
|-------------------------------------|---|-------------|-------------|-------------|----|
| Income distribution                 | Farmers' income compared to wages in the rest of the economy  | PP          |             |             |    |
|                                     | Agricultural farm income by type of farming, region, by farm size, in areas facing natural and other specific constraints | Secondary   |             |             |    |
|                                     | Average salary by sector  | Placeholder | Placeholder | Placeholder |    |
|                                     | Employees earnings ratio  | Placeholder | Placeholder | Placeholder |    |
|                                     | Income from organic farming   | Placeholder |             |             |    |
|                                     | Share of remuneration of employees over value added by sector   | Placeholder | Placeholder | Placeholder |    |
| Market power and business structure | Gross fixed capital formation in agriculture  | PP          |             |             |    |
|                                     | Share of production marketed by producer organisations  | Placeholder |             |             |    |
|                                     | Market concentration  | Placeholder | Placeholder | Placeholder |    |
|                                     | Fish landings of the EU small-scale fisheries (%)   | Placeholder |             |             |    |

Headline
Secondary
Placeholder
 PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Economic viability (1a)

- Farmers' income compared to wages in the rest of the economy: This indicator measures the evolution of agricultural income compared to the general economy. It measures the agricultural entrepreneurial income per unpaid (non-salaried) annual work unit.
- Agricultural farm income by type of farming measure the net income of agricultural farms, defined as total output less inputs plus net public receipts (subsidies less farm taxes).
- Average salary by sector (expressed as % of average salary in the total economy) is a proxy to measure the position of the sector in the overall income distribution
- Employees earnings ratio is the quotient between the average salary and value added per worker by sector
- Income from organic farming measure the income from farms dedicated to organic farming
- Share of remuneration of employees over value added by sector is a measure of income distribution between labour and capital

# Economic viability (1b)

- Gross fixed capital formation in agriculture is a key element for future competitiveness, which measures producers' investments, deducting disposals, in fixed assets
- Share of production marketed by producer organisations by four EU quality schemes computed as a comparison to total value of agricultural and food production
- Market concentration aims to measure the concentrations of suppliers, manufacturers, or service providers. A potential lack of competition and thus less market share for smaller players.
- Fish landings shows of EU small-scale vessels show the proportion of fish landings by EU-27 MS from the small-scale fisheries (SSF).

# Economic viability (2)

| Domain           | Indicator  | PP          | FP          | FD          | FC        |
|------------------|--|-------------|-------------|-------------|-----------|
| Sectorial growth | Value Added along the food chain   | Headline    | Headline    |             |           |
|                  | Labour productivity of the different sectors of the food chain                                   | Secondary   | Secondary   | Secondary   |           |
|                  | Economic valorisation of the catch by the EU small-scale fisheries (relative to total fisheries) | Placeholder |             |             |           |
| Price            | Consumer food inflation  | Headline    |             |             |           |
|                  | Price indices of the means of agricultural production, input                                     | Headline    |             |             |           |
|                  | Share of household spending on food  |             |             |             | Secondary |
| Trade            | Agricultural and food products trade balance   | Headline    | Headline    | Headline    |           |
|                  | Balassa Index  | Placeholder | Placeholder | Placeholder |           |
|                  | Import dependency  | Placeholder | Placeholder | Placeholder |           |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



No fisheries or aquaculture data for some of the indicators



# Economic viability (2a)

- Value Added along the food chain shows the gross value added by sector, year and MS.
- Labour productivity of the different sectors of the food chain is the ratio of Gross Value added (GVA) on number of persons employed
- Economic valorization of the catch by the EU small-scale fisheries (relative to total fisheries) = ratio of the SSF proportion of the catch value over the SSF proportion of the catch weight
- Consumer food inflation is expressed as year-on-year variations, comparing the price of every month against the same value for the year before – available for different food categories.
- Price indices of the means of agricultural production, input
- The agricultural price indices provide information on trends in producer prices of agricultural products and purchase prices of the means of agricultural production, which facilitates the price comparison.
- Share of household spending on food helps to monitor households' income as well as food prices to support the F2F strategy of affordable food for the EU citizens.

## Economic viability (2b)

- Agricultural and food products trade balance reports on imports and exports (quantity and value), from any partner or partner aggregation (e.g. intra- or extra-EU) of any EU MS.
- The Balassa index measures the degree of specialization of a country's export products. If the Balassa index for a product is more than 1, it means that product involves specialization. If it is less than 1 it means that no specialization is involved in the product.
- Import dependency shows how much of the domestic consumption of selected commodities is covered by imports.

# Logistics and development

| Domain                                      | Indicator  | PP | FP | FD | FC |
|---|--|----|----|----|----|
| Technology and digitalization               | Rural NGA* broadband coverage                            |    |    |    |    |
|   | Farm modernisation                                       |    |    |    |    |
|   | Gross fixed capital formation in fixed intangible assets |    |    |    |    |
| Transport, accessibility and infrastructure | Annual road freight transport by distance class          |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



Precision farming

Innovative production systems (e.g. vertical farming)

\*NGA – Next Generation Access

# Logistics and development

- Rural NGA broadband coverage shows the share of households with fixed broadband internet connection located in rural areas
- Farm modernization is the quantification of the coverage of interventions providing investment support to restructure and modernize holdings, including to improve resource efficiency.
- Gross fixed capital formation in fixed intangible assets measures producers' investments, deducting disposals, in fixed intangible assets during a given period
- Annual road freight transport by distance class informs on the quantity of agriculture, forestry and fisheries products and F&B and tobacco products that are carried out by road transport over different distance classes.

# Social dimension

# Fair, inclusive and ethical value chain (1)

| Domain         | Indicator   | PP     | FP   | FD   | FC   |
|----------------|---|--------|------|------|------|
| Animal welfare | Organic production of aquaculture products                        | Green  |      |      |      |
|                | Share of laying hens by farming method                            | Green  |      |      |      |
| Employment     | Employment by economic activity                                   | Blue   | Blue | Blue | Blue |
|                | Young farm managers in agriculture                                | Green  |      |      |      |
|                | New farm managers and new young farm managers                     | Yellow |      |      |      |
|                | Proportion of young farmers in organic agriculture                | Yellow |      |      |      |
|                | Number of fishers in the EU small-scale fisheries (passive gears) | Blue   |      |      |      |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



General animal welfare indicators (stocking densities, share of free-range livestock keeping)

# Fair, inclusive and ethical value chain (1)

- Organic production of aquaculture products: live weight of seafood produced per year and countries from labeled organic aquaculture.
- Share of laying hens by farming method: Share of laying hens according to the farming methods (Cages (enriched), Barn, Free range, Organic)
- Employment by economic activity: total employment in agriculture, the food industry and in food services in absolute terms and also as a share of total employment.
- Young farm managers in agriculture: farm managers (<40 years old) expressed as farm labour force in persons or in Annual Work Units (AWUs)
- New farm managers and new young farm managers: Evolution of number of new farm managers and the number of new young farm managers, including a gender breakdown.
- Proportion of young farmers in organic agriculture: Proportion of young farmers in organic compared to the number of the total young farmers.
- Number of fishers in the EU within the small-scale fisheries defined as a fishing vessel length of less than 12 m using passive gear.

# Fair, inclusive and ethical value chain (2)

| Domain                      | Indicator  | PP | FP | FD | FC |
|-----------------------------|--|----|----|----|----|
| Inclusion and gender equity | Gender employment gap in the food sector                       |    |    |    |    |
|                             | Proportion of women managing farms in agriculture              |    |    |    |    |
| Social protection           | Accidents at work  |    |    |    |    |
|                             | Placeholder for Improve social protection and housing F2F goal |    |    |    |    |
|                             | Precarious employment  |    |    |    |    |

Headline

Secondary

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PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption



# Fair, inclusive and ethical value chain (2)

- Gender employment gap in the food sector: difference between the employment rates of men and women aged 20 to 64.
- Proportion of women managing farms in agriculture: indicator calculated based on ESTAT indicator: Farm indicators by age and sex of the manager.
- Accidents at work: The incidence rate of non-fatal or fatal accidents at work is the number of serious or fatal accidents per 100,000 persons in employment for the economic sector "Agriculture, forestry and fishing".
- Placeholder for Improve social protection and housing F2F goal: Placeholder for the F2F goal "Ensure workers' social protection and housing conditions; promote socially responsible production methods".
- Precarious employment: Precarious employment in agriculture, forestry and fishing sector (Percentage of employees with a short-term contract of up to 3 months)

# Food environment (1)

| Domain                           | Indicator   | PP | FP | FD | FC |
|----------------------------------|---|----|----|----|----|
| (Sustainable) food affordability | Percent of the population who cannot afford a healthy diet          |    |    |    | FC |
|                                  | Affordability of a healthy diet: Ratio of cost to food expenditures |    |    |    | FC |
| (Sustainable) food availability  | Ratio plant to total protein supply                                 |    |    |    | FC |
|                                  | Average total protein supply  |    |    |    | FC |
|                                  | Food supply adequacy  | PP | FP |    | FC |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Food environment (1)

- Percentage of the total population who cannot afford a healthy diet. A healthy diet is considered unaffordable in a country when its cost exceeds 52 percent of household income. This percentage accounts for a portion of income that can be credibly reserved for food, based on observations that the population in low-income countries spend, on average, 52 percent of their income on food. Available at FAOSTAT
- Affordability of a healthy diet: Ratio of cost to food expenditures: Shows the cost of the lowest cost set of foods that would meet requirements for food-based dietary guidelines, in comparison to total food budget. As the ratio approaches 1, the more unaffordable the healthy diet. As the ratio approaches 0, the more affordable the healthy diet.
- Ratio plant to total protein supply: (as in the name of the indicator). Tracks the contribution of plant sources to total protein supply and a proxy for transition towards plant-based diets. calculated as a three-year average. Derived from FAOSTAT
- Average total protein supply: Grams of protein per person per day that are available in a country's food supply, calculated as a three-year average. Available at FAOSTAT
- Food supply adequacy estimates whether the national food supply is adequately meeting the daily requirements per person (g/capita/day) of the food groups recommended for a healthy diet. Note: Possibly not needed once having better food consumption estimates for food groups to monitor nutrition, healthy diets (placeholder for food consumption indicators).

# Food environment (2)

| Domain                                      | Indicator  | PP | FP | FD | FC |
|---|--|----|----|----|----|
| Food access                                 | Prevalence of moderate or severe food insecurity in the population |    |    |    |    |
| Food marketing and information to consumers | Food labelling   |    |    |    |    |
|   | Food promotion   |    |    |    |    |
| Food properties                             | Nutritional quality of food offer                                  |    |    |    |    |

Headline
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## Food environment (2)

- Prevalence of moderate or severe food insecurity in the population: limited access to food, at the level of individuals or households, as measured by the Food Insecurity Experience Scale survey module (FIES-SM) of FAO.
- Food labelling: nature and extent of sustainability/health-related food information. No available indicators, to be further discussed
- Food promotion: frequency and level of exposure of population groups (especially children) to food promotions. No available indicators, to be further discussed/explored.
- Nutritional quality of food offer: nutritional quality of processed foods in the EU market. A placeholder supporting the monitoring of food reformulation No available indicators, to be further discussed/explored.

# Nutrition and health

| Domain                                   | Indicator  | PP | FP | FD | FC          |
|--|--|----|----|----|-------------|
| Nutrition and healthy, sustainable diets | Prevalence of exclusive breastfeeding among infants 0-5 months of age                    |    |    |    | FC          |
|  | Placeholder for indicators on food consumption (food groups and other dietary factors)   |    |    |    | Placeholder |
| Health impact from diets                 | Prevalence of overweight and obesity among adults  |    |    |    | FC          |
|  | Prevalence of overweight and obesity among children (aged 6 to 9 years)                  |    |    |    | FC          |
|  | Prevalence of overweight and obesity among children (<5 years)                           |    |    |    | Secondary   |
|  | Burden of disease attributable to dietary risk factors (Health effects of dietary risks) |    |    |    | Secondary   |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Nutrition and health

- Prevalence of exclusive breastfeeding among infants 0-5 months of age: percentage of children less than six months old who are fed breast milk alone (no other liquids) in the past 24 hours.
- Placeholder for indicators on food consumption: data from national dietary surveys as compiled by EFSA and other sources that estimates actual food groups and nutritional consumption trends (e.g. food groups including fruits, vegetables, legumes, processed meat and red meat, sugar sweetened beverages and other dietary aspects including alcohol and salt consumption). Work in progress.
- Prevalence of overweight and obesity in adults: share of overweight and obese people based on their body mass index (BMI). BMI is defined as the weight in kilos divided by the square of the height in meters.
- Prevalence of overweight and obesity in children (6 to 9 years): overweight in school-age children and adolescents is defined as the percentage of children aged 5-19 years with sex-specific BMI-for-age  $>+1$  SD above the WHO 2007 reference median. Direct measurements data from the WHO European Childhood Obesity Surveillance Initiative
- Percentage of children under 5 years of age who are overweight: defined as weight-for-height more than 2 standard deviations of the WHO Child Growth Standards median) among children aged 0-5 years. WHO modelled data estimates
- Burden of disease attributable to dietary risk factors (Health effects of dietary risks): proportion of disease-specific burden attributable to each dietary risk factor as estimated in the Global Burden of Disease.

# Cross cutting thematic areas



# Resilience

| Domain                            | Indicator  | PP          | FP | FD          | FC |
|-----------------------------------|--|-------------|----|-------------|----|
| Resilience and exposure to shocks | Self-sufficiency rates - commodities                                     | PP          |    |             |    |
|                                   | Agricultural training of farm managers                                   | Secondary   |    |             |    |
|                                   | Combined draught indicator   | Secondary   |    |             |    |
|                                   | Direct agricultural loss attributed to disasters                         | Secondary   |    |             |    |
|                                   | Share of the top three crops of total agricultural production            | Secondary   |    |             |    |
|                                   | Utilised agricultural area managed by low-, medium- and high-input farms | Secondary   |    |             |    |
|                                   | Fertiliser self-sufficiency rate   | Secondary   |    |             |    |
|                                   | Agricultural sector resilience progress indicator                        | Placeholder |    |             |    |
|                                   | Crop production stability – annual cereals production resilience         | Placeholder |    |             |    |
|                                   | Share of local food products   |             |    | Placeholder |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Resilience (a)

- Self-sufficiency rates – commodities: ratio of domestic production on domestic consumption/use of selected agrifood commodities.
- Agricultural training of farm managers: level of agricultural training such as basic training, practical experience only, full agricultural training.
- Combined draught indicator is used to detect and monitor areas that either are affected by or are at risk of agricultural drought.
- Direct agricultural loss attributed to disasters corresponds to a subset of the Sendai Monitoring Framework indicator C-2 which assesses the direct loss occurring in the agricultural sector as a result of disasters.
- Share of the top three crops of total agricultural production (as in the name of the indicator).

# Resilience (b)

- Utilised agricultural area managed by low-, medium- and high-input farms: hectares and the percentage of utilised agricultural area (UAA) managed by low-, medium- and high-input farms in the EU Member States
- Fertiliser self-sufficiency rate: share of the consumed fertilisers that a MS and the EU produce domestically.
- Agricultural sector resilience progress indicator: improving the resilience of agriculture to climate change.
- Crop production stability – annual cereals production resilience : evolution of production of annual and perennial crops in the main categories.
- Share of local food products: share of food products placed on the market from a distance not exceeding X kilometers (X to be defined).

# Governance

- This thematic area is under development. It will provide indicators on the related thematic areas or domains on the FS sustainability model in terms of
  - Strategic planning and policies (support to related research and development, sustainable food procurement, etc.)
  - Accountability (law enforcement, fight against food fraud, illegal and unregulated fishing, etc.)
  - Effective implementation (resources assigned for implementation of policies)
  - Shared vision (participatory processes, e.g. number of parties adhering to relevant initiatives, stakeholders platforms)

# Food heritage

- Aspects under discussion:
  - Number of products by EU quality schemes expressed per category and per scheme shows the number of products that are certified per quality scheme type e.g. PGI, GI per food category e.g. cheese, wine.
  - Globally Important Agricultural Systems: systems included in the register of FAO.
  - Intangible cultural heritage: elements of the UNESCO list related to the food supply chain.

| Domain        | Indicator                                | PP | FP | FD | FC |
|---------------|--|----|----|----|----|
| Food heritage | Number of products by EU quality schemes |    |    |    |    |
|               | Globally Important Agricultural Systems  |    |    |    |    |
|               | Intangible cultural heritage             |    |    |    |    |

Headline

Secondary

Placeholder

PP-primary production, FP -Food processing, FD -Food distribution, FC -Food consumption

# Concept of the F2F dashboard

# Concept and properties

- Main communication outlet for the general public
- Two main presentation ways:
  - Interactive graphics with narrative and data visuals
  - Generic dashboard with full-size/no-scroll screens with several interrelated visualizations
- Data views
  - Standard views (browser + map/ barchart, country profiles, heatmap, progress measuring tool, stories and narratives)
  - User-defined views (comparisons, visualisation of selected indicators)

**i** Click on the tabs above the menu to select the top-down approach.

[FS model](#) | [Objectives](#) | [Supply chain component](#) | [DPSIR](#)

**Q** Search indicators

**Economic** 14 ▾

**Environmental** 34 ▲

Biodiversity 1 ▲

Biodiversity conservation and restoration of natural resources 1 ▲

Common Farmland Birds Indicator **i**

Climate change adaptation and mitigation, GHG emissions 5 ▾

Cross-cutting environmental 11 ▾

Food loss and waste reduction 1 ▾

Reduction of other emissions, pollution and use of antimicrobials in primary production 8 ▾

Sustainable use, management of resources 8 ▾

**Social** 11 ▾

## Common Farmland Birds Indicator



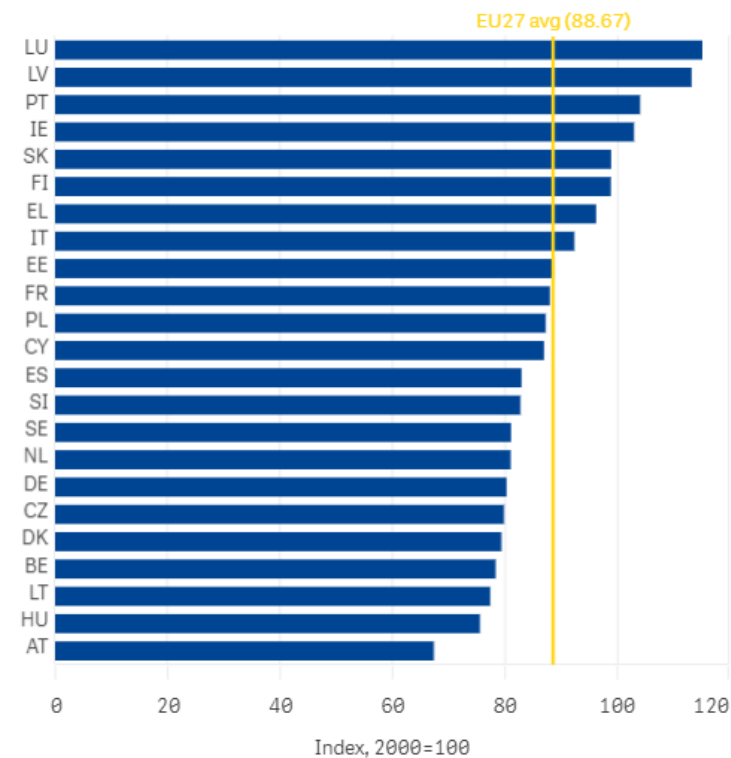
[Map](#) | [Bar chart](#)

EU-27 (Index, 2000=100)

2.04k

### Common Farmland Birds Indicator

2011





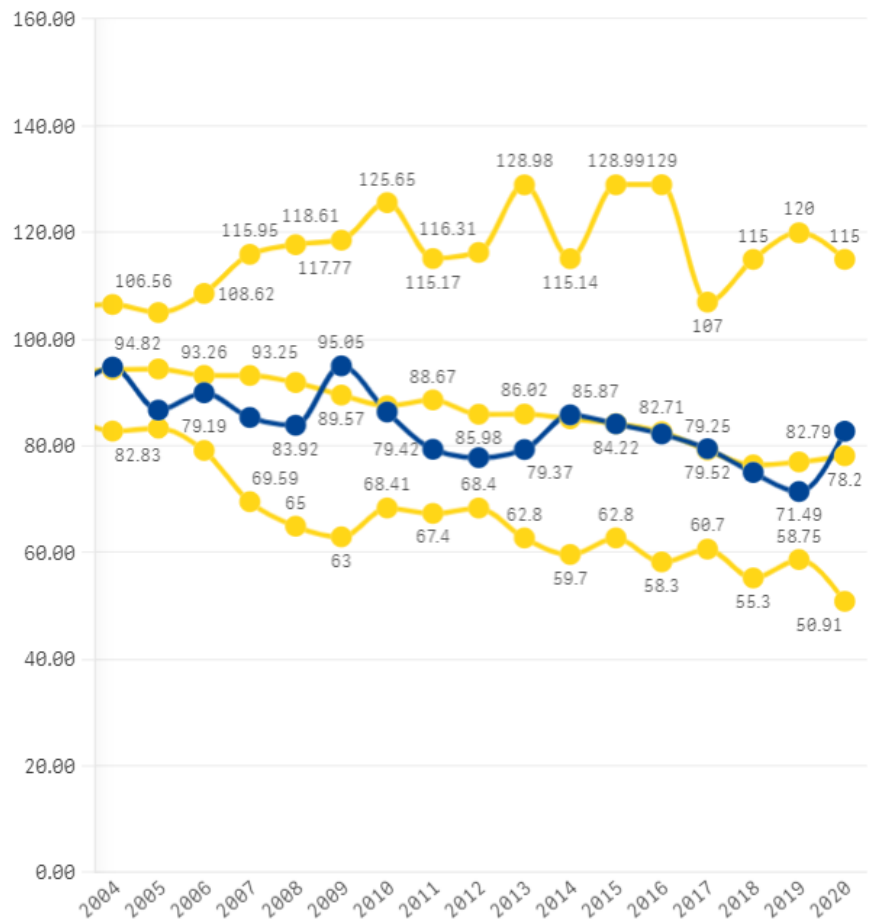
Country

Denmark

Sub-indicator



Denmark - Common Farmland Birds Indicator  
(Index, 2000=100)



**Definition:** The Farmland Bird Index is intended as proxy to assess the biodiversity status of agricultural landscapes in Europe. Birds are high in the food chain and therefore are considered good indicators for the overall state of biodiversity.

**Source:**  
<https://agridata.ec.europa.eu/extensions/IndicatorDashboard/Biodiversity.html>

# Country profiles

- In pipeline
  - Comparisons
  - Heatmap
  - Progress measuring tool
  - Stories, narratives behind the figures
  - User defined views

# Closing remarks

# Closing remarks

- The FS sustainability model and the proposed indicators are based on the outcome of the ongoing discussion within the Commission services.
- The FS structure is rather an internal reference than a rigid structure of visualisations in the dashboard.
  - Specific/targeted views can be created with simultaneous displaying of indicators from more than one domain → yet the completeness of the model matters!
- The dashboard will be an adaptive tool, that will be continuously developed (indicators may be replaced, new indicators and data views may be introduced).

# Expected outcome of the stakeholder consultation

- Completeness of thematic areas and domains. What is missing?
  - (However, no suggestion for changing the structure of the FS sustainability model, by exception of the role and location of Food heritage.)
- Indication of new data sources for additional indicators
  - (Also think of production sustainability over the time!)
- Contributions/input from stakeholders to address current gaps and improve coverage of all components are welcome!
- Expression of interest for collaboration to elaborate new indicator concepts.

# Thank you

